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SUBJECT: PERU ENERGY: SHIFTING FROM OIL TO NATURAL GAS

SUMMARY

1. Peru's government is working to substantially diversify its energy mix over the next three years. It hopes to reduce its reliance on petroleum to one third of total energy use by increasing natural gas and renewable energy use to one third each. Although Peru imported 63% of its crude petroleum in 2007, the Camisea natural gas project's increase in production and new regional pipelines will substitute for petroleum while the Peru LNG project will enable Peru to export gas to North America by 2010. Industrial and vehicular use of natural gas has been rapidly growing, and the public and private sectors are working on increasing home use. The GOP is also redoubling efforts to attract investment in renewable energy sources such as hydro, solar, wind, and biofuels. In 2003, Peru relied on petroleum-based fuels for 69.4% of its energy needs. Today that number is under 47%. If these trends are any indicator, the country is on track to meet its new energy matrix goals by 2011, while also converting Peru into a net energy exporter by then. End Summary.

ENERGY CONSUMPTION TRENDS

2. As Peru reshuffles its energy mix, it also faces a substantial increase in energy demand as a result of its economic boom. Between 2003 and 2006, Peru increased its energy consumption by 12%. In 2007 alone, energy consumption increased by 10%. That trend is likely to continue in 2008, as the Mining and Energy Ministry (MEM) stated it will invest \$559 million to bring electricity to 880,000 people in rural communities. As a result, 83% of the Peruvian population will have electricity. The GOP expects \$11.2 billion of future investment in the energy sector, with \$2.5 billion coming in 2008.

CAMISEA SLASHES PETROLEUM DEPENDENCY IN HALF

3. The Camisea natural gas project, which came online in August 2004, is the main driver weaning Peru off petroleum-based fuels and on to gas. By 2011, the GOP projects that petroleum-derived energy will only make up one third of all domestic energy, with another third being natural gas, and the final third renewables. In 2003, the MEM reported that 69.4% of Peru's energy consumption came from petroleum-based fuels, 6.4% from natural gas, 4.6% from coal, and 19.6% from renewables (mostly hydro energy). In 2006, those numbers were 47% petroleum, 21% natural gas, 4% coal, and 28% renewables.

Peru used 171,000 barrels per day of crude petroleum in 2007 -- 109,000 imported and 62,000 produced domestically. Natural gas now comprises a large chunk of hydrocarbon use in Peru (23% in 2007), second only to Diesel 2 (35%) and ahead of Liquefied Petroleum Gas (LPG, 14%) and gasolines (11%).

Peru: Energy Matrix, 2003 - 2011

	Before Camisea 2003	Current Situation 2006	Objective 2011
Coal	4.6%	4%	0%
Hydro/Renewables	19.6%	28%	33%
Petroleum	69.4%	47%	33%
Natural Gas & Liquids	6.4%	21%	34%

Source MEM, April 2008

14. MEM Minister Valdivia stated that much of that change comes from an increase in natural gas consumption, currently at 68,000 barrels daily including liquid petroleum gas (LPG), a natural gas derivative. In 2007, natural gas consumption increased 78.6% over the previous year to 193.6 million cubic feet per day, and production exceeded 250 million cubic feet per day. The boom in natural gas usage is due entirely to the Camisea gas and pipeline project.

#### CREATING DEMAND WITH SUPPLY: THE CAMISEA PROJECT

15. The Camisea Gas Project came online in 2004, extracting natural gas from jungle Block 88, an environmentally and socially sensitive area that contains by far the largest proven reserves in Peru. There are 10.4 trillion cubic feet (TCF) of natural gas in Block 88. Camisea is made up of a consortium of companies and is broken into two parts:

-- the upstream project (Argentina's Pluspetrol, US' Hunt Oil, South Korea's SK Corp., and Argentina's Techint) focuses on resource extraction over 40 years, and

-- the downstream transportation component (TGP consortium made up of Techint, Pluspetrol, Hunt, Algeria's Sonatrach, Peru's Grana y Montero, SK, and Belgium's Suez/Tractebel) consists of a 714 km pipeline that transports natural gas from Camisea to Lima (285 million cubic feet per day), a 540 km pipeline that pipes natural gas liquids from Camisea to the coast (50,000 barrels per day), and a 60 km pipeline that distributes gas within Lima and Callao.

16. The availability of natural gas as a cheap, clean and bountiful resource has prompted every electricity generator in Lima/Callao to convert from diesel and allowed numerous other industries to emerge in Lima and surrounding areas.

#### PROPOSED PIPELINES

17. On April 25, the GOP's Investment Agency (ProInversion) awarded a contract to Colombia's EEB and TGI to build a \$100-140 million gas pipeline from the Lima area, south along the coastal Department of Ica to the harbor of Marcona. This pipeline, scheduled to be completed within 30 months, will provide gas to industries like the Shougang (China) mine and CF Industries' (US) planned petrochemical plant, as well as to residential and vehicular consumers.

18. There are also two private proposals to bring Camisea gas farther south. Kuntur Gas (US) proposed a \$1.2 billion, 1,000 km pipeline connecting Camisea to Cusco, Puno, Arequipa, and Moquegua. Suez Energy (Belgium) proposed a \$1 billion, 800 km pipeline from the Lima area, along the coast to Ilo (near Chilean border) and a power plant. The pipelines are predicted to benefit the booming mining sector, and the Kuntur pipe would satisfy Cuzco's longstanding demand that it receive gas from the Camisea gas fields (which are located in the Department of Cuzco). Either pipeline, if approved, would begin operating by 2012.

#### EXPANDING THE GRID

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¶9. Gas distribution in Lima began in 2005, after Camisea gas reached the capital. Industries were quick to realize the cost savings and many switched to natural gas. As of March 2008, there were 230 industrial gas users. Every electric power plant in Lima and Callao now uses natural gas.

¶10. The number of households that have converted to natural gas remains low, but is expected to pick up. Calidda, the company responsible for gas distribution in Lima and Callao, was acquired from Suez by AEI (UK) last year. AEI has relevant experience in fostering domestic gas use in Colombia and has a more aggressive strategy for Peru than Suez did. As of the end of 2007, 7,883 homes were using natural gas. More than 65,000 had access to the grid if they wanted to make the switch, but high municipal fees and appliance replacement costs were strong deterrents. According to Calidda, 20,000 Lima households will be using natural gas lines by the end of 2008 (a 153% increase over 2007), thanks in part to a \$28 million investment to add five new districts to its natural gas grid. Interestingly, Calidda told us that poorer Peruvians are quicker to switch to natural gas because they value the cost savings more and have lower conversion costs. Calidda predicts it will add 12,000 homes per year at a cost of \$400 per home. As part of the contract for the aforementioned Ica pipeline, EEB-TGI committed to connect at least an additional 40,425 homes south of Lima over the next 8 years, with fines accumulating for each month that passes without meeting this goal.

#### FILLING GAS TANKS

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¶11. Vehicular natural gas usage, especially by taxis, is booming.

Less than 4,500 vehicles used natural gas as of October 2006. At the end of 2007, 24,000 vehicles were using natural gas provided by 22 filling stations, and 85 workshops were converting vehicles from gasoline to natural gas tanks. According to Pluspetrol, vehicular natural gas consumption has increased from 1.35 million cubic feet per day in October 2006 to 9.42 million cubic feet per day in December 2007. By the end of 2008, the GOP predicts that 50 vehicular natural gas stations will have opened to service 40,000 cars. The Municipality of Lima is in the process of purchasing an entire fleet of large gas-powered buses as part of a new mass transit system. On April 21, Clean Energy (US) launched the world's largest compressed natural gas (CNG) fueling station, able to service 32 vehicles simultaneously, including five transit buses at a time. This \$3.5 million investment will provide up to 40,000 gallons of natural gas to thousands of vehicles daily.

¶12. This boom is partially explained by innovative financing mechanisms that allow owners to pay for the conversion gradually each time they pump natural gas, and a similar mechanism that even allows home mortgage payments at the pump. Drivers barely notice these payments, as vehicular natural gas costs less than one-tenth the price of gasoline in Peru.

#### PLANS FOR EXPORT - THE PERU LNG PROJECT

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¶13. Peru LNG (a consortium led by Hunt Oil that also includes Spain's Repsol, SK, and Japan's Marubeni) is investing \$3.8 billion in constructing a massive gas liquefaction plant on the coast, a marine terminal and a 408 km pipeline to connect with the existing Camisea pipeline. The plant will have a capacity of 4.45 million tons per year and a daily supply of 625 million cubic feet. The gas will come mainly from Block 56 (3.0 trillion cubic feet). Peru LNG states the pipeline will generate \$4 billion over 18 years in government revenues, \$1.4 billion in hard revenue for the domestic economy and 10,000 direct and indirect jobs for Peruvians. The project is scheduled to come online in 2010, and a large portion of its output has been committed to Mexico. Financing for Peru LNG is being provided by the Inter-American Development Bank (IDB), the World Bank's IFC, the USG's Ex-Im Bank, and others.

#### COMMENT

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¶14. Peru should become a net energy exporter by 2011.

Peru's energy diversification program will decrease its exposure to volatility in the oil market and probably eliminate the GOP's Gasoline Price Stabilization Fund which has cost the GOP over \$65 million so far this year. The switch to natural gas from diesel is better for the environment and is even helping expand telecom coverage, as companies install fiber optic cable alongside the pipelines. While some neighboring countries are increasing restrictions to private and foreign investment and/or suffering from energy shortages, the GOP is embracing investment as a way to spur development, reduce poverty and ensure energy security.

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